

1	1. A method for eliciting an immune response in a subject comprising
2	administering an immunogenically effective amount of a peptide or protein antigen
3	comprising one or more T cell epitope(s) coordinately with a non-viral vector comprising
4	a polynucleotide encoding a T cell co-stimulatory molecule.
1	The method of claim 1, wherein the peptide or protein antigen
2	comprises a T cell epitope of a tumor antigen or viral antigen.
1	3. The method of claim 2, wherein the tumor antigen is selected from
2	p53, ras, rb, mcc, apc, dcc; nfl; VHL; MEN1, MEN2, MLM, Her-2neu, CEA, PSA;
3	Muc1, Gp100, tyrosinase, or MART1.
1	4. The method of claim 3, wherein the tumor antigen is selected from
2	a mutant or normal p53 or ras protein.
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1	5. The method of claim 4, wherein the peptide antigen comprises a
2	sequence of at least nine amino acids spanning a mutation in p53 or ras.
1	6. A method for eliciting an immune response in a subject comprising
2	administering an immunogenically effective amount of a protein antigen comprising at
3	least one T cell epitope coordinately with a non-viral vector comprising a polynucleotide
4	encoding a T cell co-stimulatory molecule.
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1	The method of claim 2, wherein the viral antigen is selected from a
2	human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV),
3	herpes simplex virus (HSV) or human papilloma virus (HPV) antigen.
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1	8. The method of claim 7, wherein the peptide antigen comprises at
2	least nine contiguous amino acids of a HPV antigenic protein.
1	9. The method of claim 7, wherein the peptide antigen comprises at
2	least nine contiguous amino acids of a HIV antigenic protein.
1	10. The method of claim 7, wherein the peptide antigen comprises at
2	least nine contiguous amino acids of a HBV or HCV antigenic protein.

The method of claim 11, wherein the co-stimulatory molecule is 2 B7-1. 1	1	(11.) The method of claim 1, wherein the co-stimulatory molecule is
2 B7-1. 1	2	selected from B7-1, B7-2, B7-3, B7-H, ICAM1, ICAM2, ICAM3, LFA1, LFA2 or LFA3.
2 B7-1. 1		
vector encoding one or more T cell co-stimulatory molecules are administered to the subject simultaneously as a mixture in a pharmaceutically acceptable carrier or diluent. 1	1	The method of claim 11, wherein the co-stimulatory molecule is
vector encoding one or more T cell co-stimulatory molecules are administered to the subject simultaneously as a mixture in a pharmaceutically acceptable carrier or diluent. The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered separately to the subject in a sequential vaccination protocol. The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered to proximal target sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or intratumoral sites. The method of claim 1, wherein the non-viral vector is selected from a RNA or DNA vector. The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. Ran immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent.	2	B7-1.
vector encoding one or more T cell co-stimulatory molecules are administered to the subject simultaneously as a mixture in a pharmaceutically acceptable carrier or diluent. The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered separately to the subject in a sequential vaccination protocol. The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered to proximal target sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or intratumoral sites. The method of claim 1, wherein the non-viral vector is selected from a RNA or DNA vector. The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. Ran immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent.	1	
subject simultaneously as a mixture in a pharmaceutically acceptable carrier or diluent. The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered separately to the subject in a sequential vaccination protocol. The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered to proximal target sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or intratumoral sites. The method of claim 1, wherein the non-viral vector is selected from a RNA or DNA vector. The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. Ran immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent.	_	
The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered separately to the subject in a sequential vaccination protocol. The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered to proximal target sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or intratumoral sites. The method of claim 1, wherein the non-viral vector is selected from a RNA or DNA vector. The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. Ran immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent.		
vector encoding the T cell co-stimulatory molecule are administered separately to the subject in a sequential vaccination protocol. 1	3	subject simultaneously as a mixture in a pharmaceutically acceptable carrier or diluent.
vector encoding the T cell co-stimulatory molecule are administered separately to the subject in a sequential vaccination protocol. 1	1	The method of claim 1, wherein the pentide antigen and non-viral
subject in a sequential vaccination protocol. The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered to proximal target sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or intratumoral sites. The method of claim 1, wherein the non-viral vector is selected from a RNA or DNA vector. The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. Ran immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. The immunogenic composition of claim 18, wherein the peptide		
The method of claim 1, wherein the peptide antigen and non-viral vector encoding the T cell co-stimulatory molecule are administered to proximal target sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or intratumoral sites. 1		
vector encoding the T cell co-stimulatory molecule are administered to proximal target sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or intratumoral sites. 1	3	
vector encoding the T cell co-stimulatory molecule are administered to proximal target sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or intratumoral sites. 1	1	The method of claim 1, wherein the peptide antigen and non-viral
intratumoral sites. The method of claim 1, wherein the non-viral vector is selected from a RNA or DNA vector. The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. An immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent.	2	
1	3	sites selected from the same, or closely-adjacent, intradermal, subcutaneous, mucosal or
from a RNA or DNA vector. The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. Ran immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. The immunogenic composition of claim 18, wherein the peptide	4	intratumoral sites.
from a RNA or DNA vector. The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. Ran immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. The immunogenic composition of claim 18, wherein the peptide		
The method of claim 1, wherein the non-viral vector comprises a naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. 18. An immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. 19. The immunogenic composition of claim 18, wherein the peptide	1	
naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. 18. An immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. 19. The immunogenic composition of claim 18, wherein the peptide	2	from a RNA or DNA vector.
naked DNA vector having the polynucleotide encoding the co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. 18. An immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. 19. The immunogenic composition of claim 18, wherein the peptide	1	The method of claim 1, wherein the new wirel wester comprises a
operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells. 18. An immunogenic composition comprising an immunogenically effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. 19. The immunogenic composition of claim 18, wherein the peptide		
molecule in eukaryotic cells. 1		
1 18. An immunogenic composition comprising an immunogenically 2 effective amount of a peptide or protein antigen comprising a T cell epitope, and a non- 3 viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule 4 operably linked to regulatory elements necessary for expression of the co-stimulatory 5 molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or 6 diluent. 1 19. The immunogenic composition of claim 18, wherein the peptide	3	
effective amount of a peptide or protein antigen comprising a T cell epitope, and a non- viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. 19. The immunogenic composition of claim 18, wherein the peptide	4	molecule in eukaryotic cells.
viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. 1 19. The immunogenic composition of claim 18, wherein the peptide	1	18. An immunogenic composition comprising an immunogenically
operably linked to regulatory elements necessary for expression of the co-stimulatory molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. 1 19. The immunogenic composition of claim 18, wherein the peptide	2	effective amount of a peptide or protein antigen comprising a T cell epitope, and a non-
molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or diluent. 1 19. The immunogenic composition of claim 18, wherein the peptide	3	viral vector comprising a polynucleotide that encodes a T cell co-stimulatory molecule
 diluent. 1 19. The immunogenic composition of claim 18, wherein the peptide 	4	operably linked to regulatory elements necessary for expression of the co-stimulatory
1 19. The immunogenic composition of claim 18, wherein the peptide	5	molecule in eukaryotic cells, formulated in a pharmaceutically acceptable carrier or
17. The minute genie composition of claim 10, wherein the popular	6	diluent.
	1	19. The immunogenic composition of claim 18, wherein the pentide
anagon comprises a recorreptione of a family antigon of Allarantizon.	2	antigen comprises a T cell epitope of a tumor antigen or viral antigen.

1	20. The immunogenic composition of claim 19, wherein the tumor
2	antigen is selected from p53, ras, rb, mcc, apc, dcc; nfl; VHL; MEN1, MEN2, MLM,
3	Her-2neu, CEA, PSA; Muc1, Gp100, tyrosinase, or MART1.
1	21. The immunogenic composition of claim 20, wherein the peptide
2	antigen comprises a sequence of at least nine amino acids spanning a mutation in p53 or
3	ras.
1	22. The immunogenic composition of claim 18, wherein a protein
2	antigen is administered as a purified protein or a tumor lysate component of a vaccine
3	formulation.
1	23. The immunogenic composition of claim 19, wherein the viral
2	antigen is selected from an antigenic protein of human immunodeficiency virus (HIV),
3	hepatitis B virus (HBV), hepatitis C virus (HCV); herpes simplex virus (HSV), or human
4	papilloma virus (HPV) antigen.
1	24. The immunogenic composition of claim 23, wherein the peptide
2	antigen comprises at least nine contiguous amino acids of a HPV E6 or E7 protein.
1	25. The immunogenic composition of claim 23, wherein the peptide
2	antigen comprises at least nine contiguous amino acids of a HIV antigenic protein.
1	26. The immunogenic composition of claim 23, wherein the peptide
2	antigen comprises at least nine contiguous amino acids of a HBV antigenic protein.
1	27. The immunogenic composition of claim 18, wherein the co-
2	stimulatory molecule is selected from B7-1, B7-2, B7-3, B7-H, ICAM1, ICAM2, ICAM2
3	LFA1, LFA2 or LFA3.
1	28. The immunogenic composition of claim 27, wherein the co-
2	stimulatory molecule is B7-1.
1	29. The immunogenic composition of claim 18, wherein the non-viral
2	vector is selected from a RNA or DNA vector.

1	30. The immunogenic composition of claim 29, wherein the non-viral
2	vector comprises a naked DNA vector having the polynucleotide encoding the co-
3	stimulatory molecule operably linked to regulatory elements necessary for expression of
4	the co-stimulatory molecule in eukaryotic cells.
1	31. The immunogenic composition of claim 18, wherein the peptide
2	antigen comprises a cytotoxic T cell (CTL) epitope.

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